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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,808	12/02/2003	Stephan Shane Supplee	I-2-0425.1US	3325
24374	7590	07/12/2005	EXAMINER	
VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			CHANG, RICHARD	
			ART UNIT	PAPER NUMBER
			2663	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 10/725,808	Applicant(s) SUPPLEE ET AL.	
	Examiner Richard Chang	Art Unit 2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 March 2005.  
 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.  
     4a) Of the above claim(s) 5, 12, 19 and 28 is/are withdrawn from consideration.  
 5) ☒ Claim(s) 34, 37, 40, 42, 45 and 46 is/are allowed.  
 6) ☒ Claim(s) 1-3, 6-10, 13-17, 20-22, 24-26, 29-3, 33, 35-36, 38-39, 41, 43-44 is/are rejected.  
 7) ☒ Claim(s) 4, 11, 18, 23, 27 and 32 is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09 March 2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's arguments and amendments with respect to claims 1-46 have been fully considered but are moot in view of the new ground(s) of rejection.

Claims 5, 12, 19 and 28 had been canceled.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6-10, 13-17, 20-22, 24-26, 29-30, 33, 35-36, 38-39, 41, 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 6,704,376 ("Mills et al.") in view of US patent 6,470,047 ("Kleinerman et al.").

Regarding claims 1, 8, 15, and 24, Mills et al teach a real-time multi-user detection (MUD) receiver and method (a CDMA system or WTRU that receives ... by codes) comprising steps of

the voting process is a matrix (K users x J time or symbol intervals) of soft decision values (constructing a system ... with their codes),

based on the matrix ( $K$  users  $\times$   $J$  time or symbol intervals) of soft decision values generating soft symbol from a particular user at a particular time interval (based on the constructed ... of the possible codes),

based on the soft symbols, outputting the estimates of the data bits that correspond to the original uncoded data bits going into the system at each transmitter (based on the  $N$  soft symbol ... received codes), and

outputting the matrix ( $K$ .times. $J$ ) of soft values that corresponds to conditional probabilities of the channel symbols to extract the corrected bit or symbol decisions (soft data) (extracting data from ... received codes).

Mills et al. teaches substantially all the claimed invention but did not disclose expressly the particular application involving limitations of

“the soft symbol estimates being used to perform a BCD energy measurement”.

Kleinerman et al. teach that the receive signal is then passed through a bank of these matched filters wherein each of the filters is matched to a specific interference and the energy output of each filter is measured and the type of interference yielding the maximum energy is chosen (See Fig. 3, Col. 17, lines 62-67).

A person of ordinary skill in the art would have been motivated to employ Kleinerman et al. in Mills et al. in order to obtain a real-time multi-user detection receiver and method and to take advantage of passing the receive signal through a bank of these matched filters wherein each of the filters is matched to a specific interference and measuring the energy output of each filter and choosing the maximum energy in claims 1,8,15 and 24.

The suggestion/motivation to do so would have been to passing the receive signal through a bank of these matched filters wherein each of the filters is matched to a specific interference and measure the energy output of each filter is and choose the maximum energy, as suggested by Kleinerman et al. in Col. 17, lines 62-67. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Kleinerman et al. with the Mills et al. to obtain the inventions specified in claims 1,8,15 and 24.

Regarding claims 2, 9, 16 and 25, these claims have limitations that is similar to those of claims 1,8,15 and 24 and Mills et al further teach that the output of the MUD decision tree is a set of surviving best sequence estimates with discrete values over users and time and the voting step 460 is performed on each symbol in the data block for each user (step of extracting data is performed using a multi-user detector), thus it is rejected with the same rationale applied against claims 1,8,15 and 24 above.

Regarding claims 3, 10, 17 and 26, these claims have limitations that is similar to those of claims 1,8,15 and 24, thus it is rejected with the same rationale applied against claims 1,8,15 and 24 above.

Regarding claims 6-7, 13-14, 20-22 and 29-31, these claims have limitations that is similar to those of claims 1-3,8-10,15-17 and 24-26 and Mills et al further teach that a whitening matched filter bank is used in the preferred embodiment, thus the signal is 'warped' or spread-out into the space which reduces the effects of other users in close proximity and lowers the effects of 'bleeding' on the decision tree (the N soft symbol estimates are based on whitening matched filter (WMF) outputs) (See Fig. 3 and 5, Col.

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17, line 44 to Col. 19, line 43), thus it is rejected with the same rationale applied against claims 1-3,8-10,15-17 and 24-26 above.

Regarding claims 33,35-36,38-39,41,43-44, these claims have limitations that is similar to those of claims 1-3,8-10,15-17 and 24-26, thus it is rejected with the same rationale applied against claims 1-3,8-10,15-17 and 24-26 above.

#### ***Allowable Subject Matter***

4. Claims 34,37,40,42,45-46 are allowed.

5. Claims 4,11,18,23,27 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if no art rejection can be applied.

#### ***Examiner's Statement of Reasons for Allowance***

6. The following is an examiner's statement of reasons for allowance:

The prior art along or in combination fails to teach or make obvious the following limitations:

"marking codes in the constructed matrix that have not been received as being invalid; and marking codes in the constructed matrix that have been received as being valid, wherein the invalid codes are not used to extract data from the matrix" as recited in the independent claims 34,37,40,42,45-46 and the dependent claims 4,11,18,23,27 and 32.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chang whose telephone number is (571) 272-3129. The examiner can normally be reached on Monday - Friday from 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*RKC*

rkc

Richard Chang  
Patent Examiner  
Art Unit 2663

*Ricky Ngo*  
RICKY NGO  
PRIMARY EXAMINER

*7/11/05*